**Percentage Yield**

*Directions*: *Solve each of the following problems. Show your work, including proper units, to earn full credit.*

1. “Slaked lime,” Ca(OH)2, is produced when water reacts with “quick lime,” CaO. If you start with 2 400 g of quick lime, add excess water, and produce 2 060 g of slaked lime, what is the percent yield of the reaction?

2. Some underwater welding is done via the thermite reaction, in which rust (Fe2O3) reacts with aluminum to produce iron and aluminum oxide (Al2O3). In one such reaction, 258 g of aluminum and excess rust produced 464 g of iron. What was the percent yield of the reaction?

3. Use the balanced equation to find out how many liters of sulfur dioxide are actually produced at STP if 1.5 x 1027 molecules of zinc sulfide are reacted with excess oxygen and the percent yield is 75%.

2 ZnS(s) + 3 O2(g) 🡪 2 ZnO(s) + 2 SO2(g)

4. The Haber process is the conversion of nitrogen and hydrogen at high pressure into ammonia, as follows:

N2(g) + 3 H2(g) 🡪 2 NH3(g)

If you must produce 700 g of ammonia, what mass of nitrogen should you use in the reaction, assuming that the percent yield of this reaction is 70%?

Answers: 1. 65% 2. 87% 3. 4.19 x 104 L SO2 4. 824 g N2